

THE OCEANOGRAPHICAL INSTITUTE AT PARIS.

THE inauguration of the Oceanographical Institute of Paris, which took place on January 23, marks not only the completion of the foundation of the Prince of Monaco's institute in Paris and Monaco, but an era in the history of the science of oceanography. If Britain led the way in initiating the systematic scientific investigation of the sea by the dispatch of the *Challenger* expedition in 1874 under the leadership of Sir Wyville Thomson, and by the publication of the results of that remarkable expedition under the direction of Sir Wyville Thomson and Sir John Murray, no country or individual has done more to establish oceanography as a science than His Serene Highness the Prince of Monaco.

Mr. J. Y. Buchanan has for so many years been associated with the Prince of Monaco and his oceanographical researches, and one sees as an outcome of

ensure this he has created the Oceanographical Institute of Paris, where courses of instruction to students of the university, and public lectures of a popular character are given. Thus the Oceanographical Institute is composed of (1) the "Institut Océanographique" of Paris, and (2) the "Musée Océanographique" of Monaco. The Prince has familiarly described the museum at Monaco as the workshop or factory, and the institute at Paris as the retail house. At Monaco is carried on the work of a laboratory, and an exhibition of products of the sea in an interpretative, scientific, and yet attractive manner. At Paris there are lectures and demonstrations which, it is hoped, will diffuse a taste for oceanography among industrious youths, who would ultimately complete their studies by personal research work at Monaco, and afterwards give their successors at the institute in Paris the fruit of their labours. Thus the two establishments form one institute with an unbroken interchange of work—experimental on the one hand, didactic on the other, all co-ordinated and concurrent with the same aim—the advancement of oceanographical science.

The institute, as has already been pointed out, is at the same time French and international. French because its seat is in Paris, with a French "Conseil d'Administration"; international because the men in whose hands the Prince of Monaco has placed the technical scientific direction are chosen from the whole world, without distinction of nationality, amongst savants who are qualified oceanographers. The Prince himself is president, Mr. J. Y. Buchanan, F.R.S., vice-president, and Sir John Murray, K.C.B., F.R.S., and the writer, are, along with Mr. Buchanan, the British representatives. Among others on this "Comité de Perfectionnement" are Dr. Jules Richard, who has so long been the chief of the Prince's scientific staff on board his ships, and who is now director of the museum at Monaco, which, as Mr. Buchanan has pointed out, owes so much to his "strenuous and unselfish work"; Dr. Paul Regnard, administrator of the institute in Paris; Prof. Dr. K. Chun,

Leipzig; Prof. Hergesell, of Strassburg; M. Forel, of Lausanne; Dr. F. Nansen, Christiania; Commandant F. A. Chaves, director of the meteorological service at the Azores, and several others. The late Prof. Agassiz represented the United States on the committee. It will be seen from these few names mentioned how international this committee is.

Situated in the heart of the Latin quarter, in Rue St. Jacque, the institute is destined to fulfil an important rôle in the educational life of Paris. The site chosen is the old property of the "Dames de Saint-Michel," which was acquired in 1906 by the University of Paris with the help of the State, of the city of Paris, and of the Prince of Monaco, and the university has ceded the part occupied by the institute to the Prince of Monaco.

In selecting M. Nénot as architect, the Prince has been able to combine art with science in the erection of the institute at Paris.

The central feature of the institute is a large lecture theatre, accommodating eight hundred people,



FIG. 1.—View of the Oceanographical Institute at Paris.

his influence the present methods of the physico-chemical investigations, that are being carried out on board the *Princesse Alice*, in the museum at Monaco, and the institute in Paris. This valued help and guidance the Prince has recognised, not only conferring on Mr. Buchanan the Order of St. Charles, but also by making him vice-president of the "Comité de Perfectionnement."

Mr. Buchanan has given an impression of the life-work of the Prince of Monaco, which found expression in the solemnities¹ connected with the inauguration of the Oceanographical Museum of Monaco in April last year,² and it is now proposed to add a further impression of the Prince's work on the occasion of the inauguration of the Oceanographical Institute of Paris.

When the Prince commenced to build the museum at Monaco he was determined that the institution should yield the best possible scientific returns. To

¹ NATURE, April 14, vol. lxxxiii., p. 191.

² Ibid., November 3, vol. lxxxv., p. 7.

in which it is intended to give courses of popular lectures on oceanography. This large lecture theatre is ingeniously combined with a smaller one, which

the important library that already exists at the museum at Monaco. Two large rooms are set apart for aquaria, one contains four large tanks, and the other is to contain a large number of small aquaria, where living animals can be observed. The septic dissecting chamber and theatre forms a novel and interesting part of the institution, and close by is a crematorium for the disposal of organic waste products. There is an excellent mechanic's workshop, fitted up with every possible requirement, and in charge of a capable mechanic of the French Navy. Already, as an example of work that can be done in this workshop, it may be mentioned that a small sounding machine, which is used on board one of the Prince's ships, was entirely constructed here.

There is also a special room fitted to contain some 96,000 lantern slides.

The "secretariat" is an important part of the institution as well as a handsome council chamber, in which the "Conseil d'Administration" and the "Comité de Perfectionnement" meet. The secretary's room is decorated in a very beautiful and original manner by a young artist, M. Laugier, who has passed several years studying in the museum at Monaco, at the Sorbonne, and at Roscoff. He has thus become thoroughly familiar with the forms and

colours of many living marine animals and plants. He has represented on the walls of the "secretariat" a scene below the sea, so that the secretary lives in a

is suited to accommodate eighty persons, and is suitable for conducting systematic scientific courses of lectures to university students. The auditorium of one theatre faces that of the other, and the screen which forms the lantern screen for each theatre, divides the one from the other. The small lecture room also forms additional seating accommodation should the large one be at any time crowded.

The administrator of the institute is Dr. Paul Regnard, who has for many years been associated with the Prince's work. His house forms part of the building, so that the administrator is always on the spot. Under him are three professors—Prof. Berget, for the study of physical oceanography; Prof. Joubain, for biological oceanography; and Prof. Portier for the study of physiology of marine animals and plants. Each professor has a very comfortable private room of his own, and attached to it a large well-equipped laboratory, with every scientific requirement, and even many scientific luxuries, including a spacious and well-fitted photographic dark room to each of the three departments. These private laboratories are each large enough to accommodate several research students if the professor of the department so desires. There are, besides, a few small laboratories, which are set apart for specialists of any nationality to carry out any special research.

There is a good library which will be subsidiary to

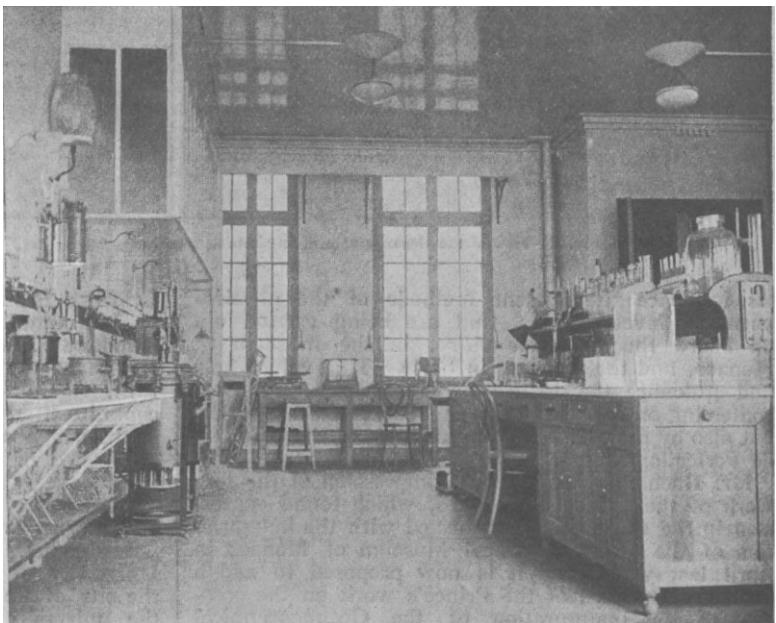


FIG. 3.—Prof. Portier's Physiological Laboratory.

veritable aquarium—wonderful molluscs, crustacea, and strange fish swimming round among rocks and waving sea-weed, and the whole culminating in a

whirlpool in the centre of the ceiling, in which is figured a cuttle-fish with its outstretched arm.

The council chamber is richly but gracefully ornate, though more orthodox. The large lecture theatre is of excellent Florentine architecture, with fine panels by M. Louis Tinayre, who has accompanied the Prince on board the *Princesse Alice* during several voyages, not only in the Mediterranean and tropics, but also in Spitsbergen. One panel represents oceanographical operations on the deck of the *Princesse Alice*, especially the taking on board of a trawl and a trap from the deep sea. Another represents a whale-boat in charge of the Prince, who is fast to a whale. A third represents the selection of the larger material from the trawl on the deck of the ship, while a fourth pictures finer work being carried out below, inside the scientific laboratory.

The inauguration was presided over by the Prince of Monaco himself, and was graced by the presence of the President of the Republic, M. Fallières, and many members of the Government, and by Ambassadors and Ministers of Foreign Powers at Paris. There were also the members of the "Conseil d'Administration" and of the "Comité de Perfectionnement." A guard of honour, formed from the Republican Guard, lined the streets outside the building, and the band of the Republican Guard played the "Marseillaise" and the Monagasque national anthem as the President of the Republic and the Prince of Monaco entered the lecture theatre.

The proceedings were opened by an eloquent address by the Prince of Monaco, who pointed out that the opening of the institute was the crowning of the work he had devoted his life to during the last twenty-five years. He then proceeded to give an account of the aims and objects of the museum and institute, which have already been given in the pages of NATURE. Finally, he gave the reason why he had chosen Paris as the seat of the institute, and it is best to quote the Prince's own words in his fine peroration, which left a deep impression on the audience.

"Si j'ai choisi cette capitale pour y centraliser mon œuvre, c'est que Paris a gagné la reconnaissance du monde intellectuel : les lettres lui doivent un rayonnement incomparable, les arts ont chez lui une de leurs plus généreuses patries, la science lui doit l'affranchissement qui ouvre à la pensée des champs sans bornes. Mais c'est aussi parce que certaines âmes demeurent toujours sous l'influence de l'atmosphère où sont nées leurs premières affections et où leurs vieilles tendresses sont mortes ; où des peines ont fortifié leur courage et où les contingences de la vie ont orienté leurs efforts."

"Le musée océanographique de Monaco semble un vaisseau ancré sur la côte avec des richesses extraites de tous les abîmes ; je l'ai donné comme une arche d'alliance aux savants de tous les pays."

"L'édifice où nous sommes recueillera la quintessence du travail élaboré par l'océanographique qui planera idéalisée sur ce vaste domaine universitaire, au milieu du flot grandissant de la science. Et je le confie à cette ville de Paris qui m'a enseigné le travail et dont l'esprit et le cœur ont si souvent dirigé l'esprit et le cœur de l'humanité entière."

The Prince was followed by M. Maurice Faure, Ministre de l'Instruction Publique, speaking in the name of the Government, who eloquently thanked the Prince on behalf of France and the University for his gift.

Others who spoke were M. Armand Gautier, président de l'Academie des Sciences, and M. Liard, vice-recteur à l'Academie de Paris, as well as M. Perrier, directeur du Muséum d'Histoire naturelle.

Finally, M. Henri Bourée, aide-de-camp to the Prince of Monaco, gave some very excellent photographs and kinematograph views of work on board the *Princesse Alice*. These included some very mar-

vellous colour photographs of living invertebrates that had been gathered during some of the cruises—the most striking of which was a brilliant physalia, glittering with translucent violet in the sun. The kinematograph also showed the movement of the physalia in a glass tank.

WILLIAM S. BRUCE.

THE OBSERVATORY AT MESSINA.

IN connection with seismological investigations, Italy is the possessor of a prestige which we trust will grow. It was the first European country in which the study of earthquakes received special recognition and Government support. It systematised seismometry, and through M. di Rossi published the *Bullettino del Vulcanismo Italiano*, which, I believe, was the first journal ever issued which dealt specially with hypogenic activities. The work commenced in Italy was extended in Japan, and at the present time every civilised country in the world has established earthquake observatories and recognises the scientific and practical importance of what is now a new science. From the knowledge we now possess of earthquake motion new rules and formulæ for the use of builders and engineers have been established. These have been extensively applied, and we see that the new types of structure withstand violent movements, while ordinary types in their vicinity have failed. The new science has already justified its existence by thus minimising the loss of life and property. A side issue of seismometry has led to the localisation of faults on railway lines and to alterations in the balancing of locomotives. The result of the latter has been to reduce the consumption of fuel.

Now we know that in whatever part of the world we live it is possible to record large earthquakes, even if their origins are so far removed as our antipodes. These teleseismic records have increased our knowledge respecting the interior of our planet, thrown light upon the cause of certain cable interruptions, indicated suboceanic regions where depths are changing, and have had a far-reaching importance in many other directions, both scientific and practical. Although we now know that practical seismometry is open to everyone, still there are particular sites which seem more suitable than others for particular investigations.

The popularity of the seismologist would be enhanced if, like the astronomer, he had the power to predict. The latter tells us exactly when we shall see the next eclipse of the moon. We stand outside our door at the appointed time; the eclipse takes place, and we are again reminded of the accuracy of astronomical calculations. Whether the eclipse did or did not occur at the minute specified, so far as the general public are concerned, might not matter very much, but it would matter if the eclipse really meant, as it was supposed to mean in the Middle Ages, a portent of a great disaster. What the public imagine they would like to know about an earthquake is the time at which it might occur. If this could be stated, and at the same time something about the character of the expected disturbance in earthquake districts, seismology would be liberally supported. Astronomers have received the support of nations since the days of astrology, while seismology is in its childhood seeking for more extended recognition, and it is only as this is afforded that the public should look for replies to their difficult inquiries.

Through the Straits of Messina there is a fault or line of faults in the earth's crust, and from time to time, as in 1783, and in 1908, along these, sudden yieldings have taken place. It has been suggested by many seismologists that before such reliefs of strain take place a measurable amount of rock-hinging may